City of Louisville
COLORADO • SINCE 1878

Town of Superior

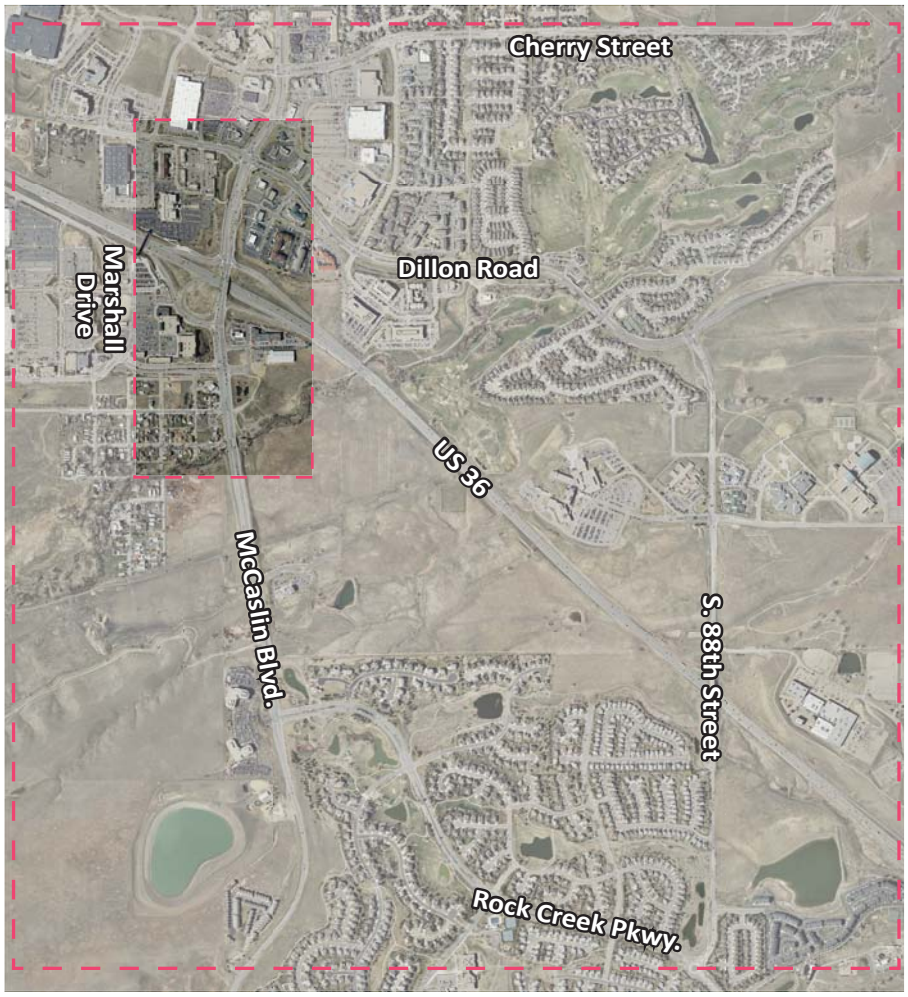
PUBLIC MEETING NOTICE

Monday, April 16, 2012

6:30 to 8:00 pm - Superior Town Hall - 124 E Coal Creek Dr.

US 36 and McCaslin Blvd. Interchange

Near-term Conceptual Alternatives Assessment



WHAT? **A Second Public Meeting**

The City of Louisville and the Town of Superior, in association with the Colorado Department of Transportation, invite residents, commuters, business and property owners to our second public meeting regarding improvements for the redesign of the US 36 and McCaslin Interchange.

WHY? **To Discuss the Evaluation Results of Our referred Set of Alternatives**

The two municipalities have evaluated the traffic operations and initial construction costs of three alternative design configurations for the interchange. The intent of the meeting is to gain public feedback on the evaluation and the alternative analysis.

WHEN? **Monday, April 16, 2012**

The meeting is being held at the Superior Town Hall - 124 E Coal Creek Dr., from 6:30 pm to 8:00 pm.
The meeting format will be an open house with a formal staff presentation at 7:00 pm.

ITEM NO. 1

INFORMATION FOR MEETING
OF THE SUPERIOR PLANNING COMMISSION

AGENDA ITEM NAME: **Discussion and Consideration of US 36 McCaslin Interchange Improvement Options**

MEETING DATE: **April 3, 2012**

PRESENTED BY: **Alex Ariniello, Public Works Superintendent**

PRESENTED FOR: **Discussion/Recommendation to Town Board**

BACKGROUND:

Since 1997 the Town of Superior and the City of Louisville have agreed to work together on planned improvements to the Superior/Louisville interchange of US 36 at McCaslin Boulevard and its capacity to handle traffic generated by existing and anticipated development within each community. The first phase of improvements was completed in 2006 with the construction of the SW loop on the southwest quadrant of the Interchange.

The second phase of improvements for the northeast quadrant was anticipated to include a NE loop. The second phase improvements were considered as part of the US 36 FEIS, which was completed in December 2009. The FEIS recommended widening or replacing the McCaslin bridge to provide for nine (9) lanes including dual northbound left-turn lanes. Estimated costs for the interchange improvements were $30 to 40 million. The FEIS did not recommend the northeast loop, the Town of Superior objected to the McCaslin Interchange dual left design in the FEIS, but ultimately the dual left option was included in the Record of Decision (ROD).

In mid-2011, the City of Louisville, jointly with the Town of Superior and the Colorado Department of Transportation, retained a multi-disciplined transportation planning and engineering team to conduct a Denver Regional Council of Governments (DRCOG) Sub-Regional Traffic Modeling, Transportation Analysis, and Conceptual Design for the US 36 and McCaslin Boulevard Interchange. The purpose of this project is threefold:

1) Establish and document both the short-term (10-year) and long-term (20-year) transportation demand expected to be served by the US 36 and McCaslin Boulevard Interchange. This DRCOG sub-regional transportation modeling exercise will consolidate traffic projections from the updated DRCOG 2035 Regional

Transportation Model along with both the US 36 Environmental Impact Statement and the Jefferson Parkway Traffic Analysis.

2) Conduct a short-term (10-year) and long-term (20-year) micro-simulation traffic analysis for three context sensitive alternative interchange concepts which may include: a dual northbound left turn lane (from McCaslin to US 36); a diverging diamond interchange, and a third innovative context-sensitive design solution based upon local, state, and national best-practices.

3) Generate a conceptual design and order of magnitude cost estimate for each of the three identified alternatives and the preferred long-term connection between Louisville and Superior.

- Alternative Design Concepts considered are illustrated in the attached "Initial Screening of Alternatives" sheet. The Dual Left and Diverging Diamond concepts were selected for further evaluation. A Public Open House was held February 2, 2012 to discuss these options. A summary of the public input is attached.

- Conceptual drawings and cost estimates for the Dual Left and Diverging Diamond concepts along with a couple of variations are attached along with performance measures such as travel time savings and benefit-cost ratios.

- The Dual Left Option will provide a short term solution but will not accommodate long term traffic projections. It will not affect RTD operations and will provide for pedestrians in a similar fashion as the current interchange. It does not provide similar operational improvements as the northeast loop. The cost is about $3 million.

- The Diverging Diamond Option is a new, innovative concept which has only been implemented in a few communities in the United States. Since both ramps would have two-phase traffic signal control, the operational characteristics would be similar to the northeast loop concept. (See attached travel time analysis). This concept would also alleviate the McCaslin to Marshall weave issue by creating a signalized triple right-turn movement from the eastbound off-ramp that would alternate with the southbound through movement. The cost of the 6-lane Diverging Diamond Concept (without bus improvements) is estimated at $7 million.

- Due to the two-phase crossover intersections, straight through movements at the exit ramps would not be allowed. RTD buses currently make these through movements to serve the bus stations located on the west side of the interchange. To accommodate the bus movements, this Option includes grade separations for buses on the eastbound off-ramp and the westbound on-ramp. The cost of these bus improvements is significant at about $5 million, but will reduce travel time by about 1 minute for every bus passing through the interchange.

Alternative 1: Dual Left-Turn Concept

PROS:

- Provides additional capacity in the short term - 10 years
- Can be constructed with available local funding

CONS:

- Does not provide the capacity and level of service of other options
- Does not accommodate long term traffic projections - 20 years

OR

Alternative 2:

Diverging Diamond Concept

PROS:

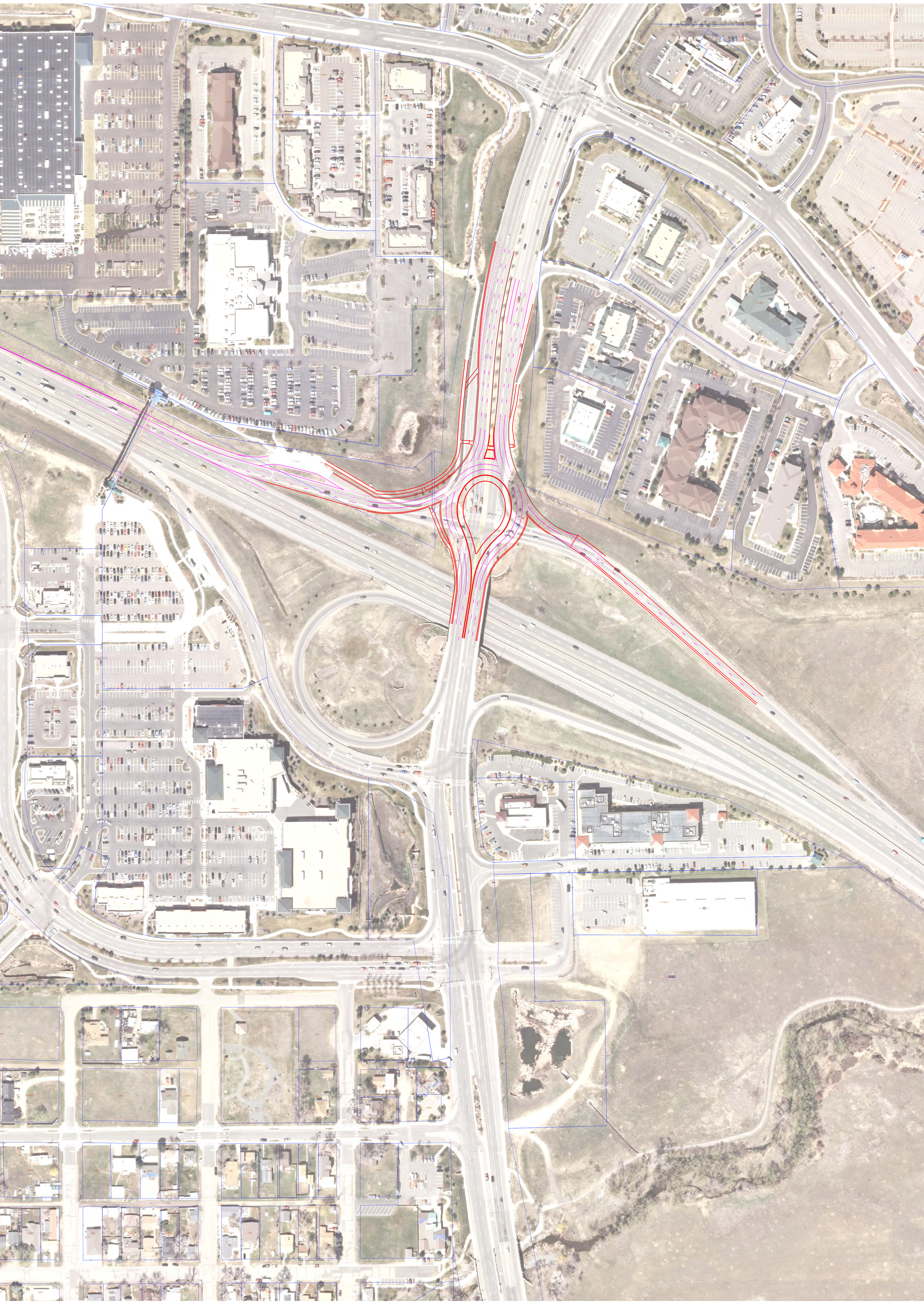
- Two-phase operation equivalent to the two-loop concept service level
- Accommodates long term traffic projections
- Benefits for the McCaslin to Marshall weave issue
- Significant travel time savings for bus riders

CONS:

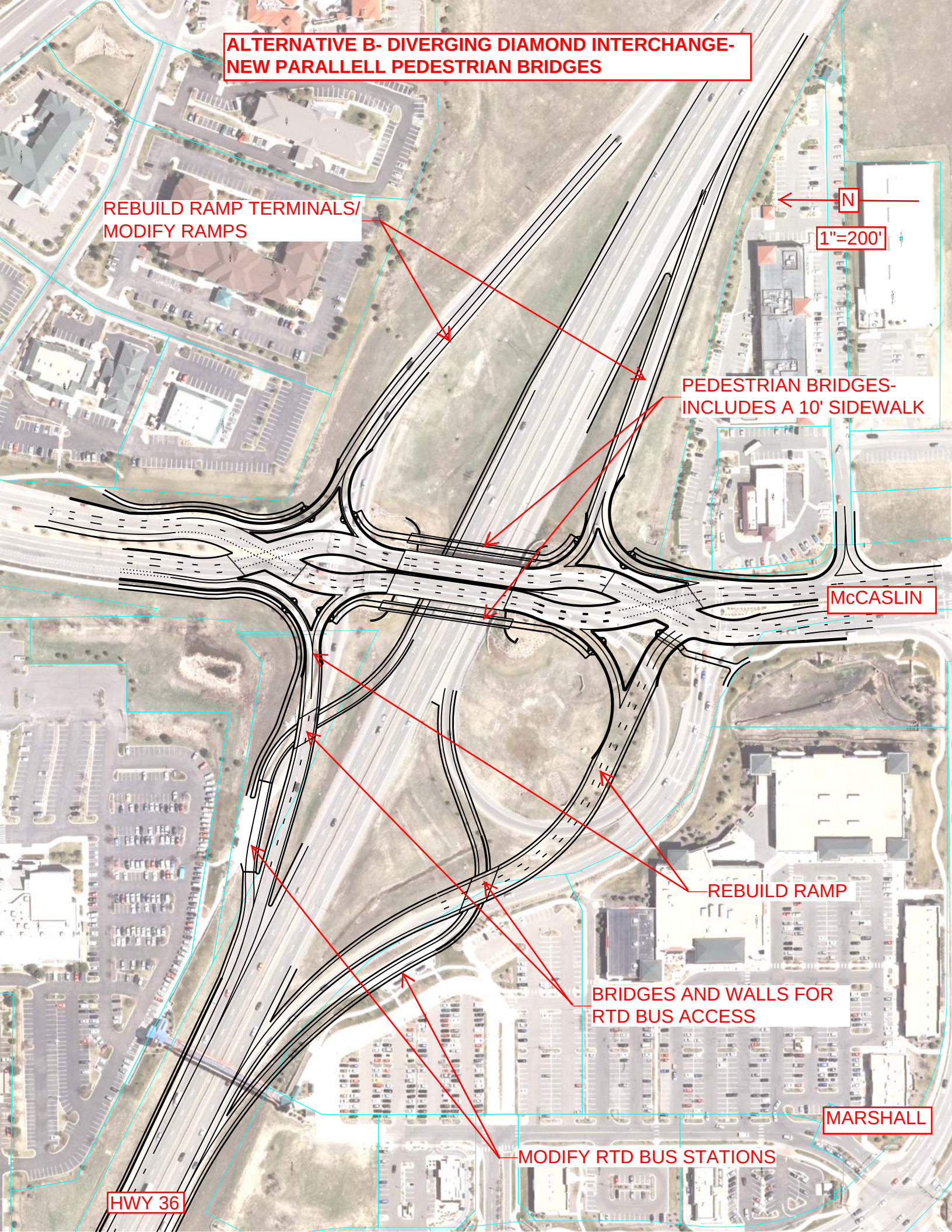
- High Cost - $12 million with RTD improvements
- Significant disruption during construction
- May need RTD or federal/state funding
- May require CDOT 1601 process and environmental clearances

ATTACHMENTS:

- US 36 FEIS McCaslin Interchange Concept
- Initial Screening of Alternatives
- Summary of Open House Public Comment
- Conceptual Design Drawings
- Operations Summary
- Benefit-Cost Analysis
- Travel Time Summary




ALTERNATIVE A2- BRIDGE WIDENING TO ACCOMMODATE DUAL LEFTS + PEDESTRIAN BRIDGE
WIDENED STRUCTURE INCLUDES A 5' PED REFUGE
PEDESTRIAN BRIDGES- INCLUDE A 10' SIDEWALK
HWY 36
MARSHALL
McCASLIN
N
1"=200'


ALTERNATIVE B- DIVERGING DIAMOND INTERCHANGE-
NEW PARALLELL PEDESTRIAN BRIDGES
REBUILD RAMP TERMINALS/
MODIFY RAMPS
N
1"=200'
PEDESTRIAN BRIDGES-
INCLUDES A 10' SIDEWALK
McCASLIN
REBUILD RAMP
BRIDGES AND WALLS FOR
RTD BUS ACCESS
MARSHALL
MODIFY RTD BUS STATIONS
HWY 36


DAHLIA EXTENSION CONCEPT
DAHLIA
REALIGN
ROADWAY
McCASLIN
US 36
CONSTRUCT
UNDERPASS
MARSHALL
COAL CREEK
N
1"=200'

US 36 McCaslin Interchange Operations Summary

Design Option	Cost	Critical Operational Issues		
		2020	2025	2030
No Build	--	During the morning and afternoon peaks, the northbound left turn onto westbound US 36 queues back through Marshall Road and down McCaslin.	Overall breakdown of interchange operations, primarily due to westbound off-ramp intersection operating over capacity. In addition, congestion of southbound weave between eastbound off-ramp and Marshall Road causes queues to extend to US 36.	Overall breakdown of interchange operations, primarily due to westbound off-ramp intersection operating over capacity. In addition, congestion of southbound weave between eastbound off-ramp and Marshall Road causes queues to extend to US 36.
Roundabout at Westbound Ramp Intersection	$2.95M[1]	During the morning and afternoon peaks, the westbound off ramp queues extend back onto US 36.	Alternative failed prior to time horizon, therefore not analyzed.	Alternative failed prior to time horizon, therefore not analyzed.
4-Lane Diverging Diamond Interchange	N/A[2]	During the morning and afternoon peaks, northbound traffic backs up from the eastbound US 36 ramps intersection through Marshall Road and down McCaslin, and in the southbound direction traffic queues from the westbound US 36 ramps intersection back through Dillon Road.	Alternative failed prior to time horizon, therefore not analyzed.	Alternative failed prior to time horizon, therefore not analyzed.
Dual Northbound Left Turn Lanes at Westbound Ramp Intersection	$3.69M[3]	No significant issues	In the afternoon, the southbound direction experiences poor operations through the interchange and Marshall Road. As a result, long southbound queues extend north and affect the Dillon Road intersection. In addition, congestion from the southbound weave between the eastbound off-ramp and Marshall Road causes queues to extend onto US 36.	Alternative failed prior to time horizon, therefore not analyzed.
6-Lane Diverging Diamond Interchange	$12.32M[4]	No significant issues	No significant issues	No significant issues, but interchange is operating at capacity.
6-Lane DDI + Dahlia Underpass	$19.05M[5]	No significant issues	No significant issues	No significant issues

1. This cost is for a design that does not impact adjacent land holders, but requires modifications to the north bridge abutment. A design option that avoids the bridge would cost $2.34M, but would require acquiring approximately 6,920 SF of additional ROW.
2. Since this option had significant operational issues in 2020, no costs were developed.
3. This cost assumes widening the east side of the bridge structure for the new turn lane, plus new pedestrian bridges on either side of the structure. A design option that would include attached sidewalks on both sides of the bridge (similar to existing conditions) would cost $2.15M.
4. Because the locations of the crossover intersections preclude a through movement from the off-ramp to the on-ramp, this design includes separate slip ramps for RTD that cross under both the existing bridge structure and the eastbound off ramp/westbound on-ramp to access the existing RTD bus stops. The costs associated with the RTD ramps is approximately $5.16M.
5. This costs includes the interchange ($12.32M) plus the new road connection ($6.73). The recent revisions to the US 36 profile result in highway lanes that are lower than previously considered. This would lower Dahlia to a level that would be at or near the current elevation of Coal Creek, which may result in groundwater issues that would preclude construction of the connection.

Note. The Northeast Loop Ramp option would operate without significant issues until 2030, similar to the 6-lane DDI. At that point, afternoon congestion from the southbound weave between the eastbound off-ramp and Marshall Road causes ramp queues to extend back onto US 36. The Town of Superior has estimated that the cost of this option to be approximately $7.0M.

Benefit Cost Analysis

Alternative	Cost	Lifespan	2020		2025		2030	
			Benefit[2]	Benefit/Cost Ratio	Benefit[2]	Benefit/Cost Ratio	Benefit[2]	Benefit/Cost Ratio
Roundabout	$2,946,000	5 Years	($7,080,750)	-2.40				
Dual Left Turn	$3,692,000	10 Years	$12,241,830	3.32	$19,511,400	5.28		
Diverging Diamond	$12,320,000	15 Years	$11,612,430	0.94	$43,932,120	3.57	$157,066,770	12.75
Diverging Diamond[1]	$7,159,000	15 Years	$11,612,430	1.62	$43,932,120	6.14	$157,066,770	21.94

1. Excludes costs associated with RTD improvements ($5.161M).
2. Benefits calculated on delay savings over the No Action Alternative up to the identified year, assuming the project opened in 2015.

Note: An operational analysis of the NE Loop Ramp indicated that improvement would extend the lifespan of the interchange by 15 years and offer similar delay improvement benefits as the Diverging Diamond option (total benefit of approximately $158.4M). The Town of Superior has projected the cost of the NE Loop at $7.0M, which yields a benefit/cost ratio of 22.65.

McCaslin Boulevard

Year 2020 - Travel Time Summary[1]

	Travel Time (seconds)					
Direction	No Build	Dual Left-Turn	4-Lane Diverging Diamond	6-Lane Diverging Diamond	Roundabout	Northeast Loop Ramp
AM Peak						
Northbound	176	111	148	137	133	132
Southbound	177	175	154	125	162	119
Superior to Boulder	184	117	101	111	89	101
Denver to Superior	107	108	106	94	763	128
PM Peak						
Northbound	155	143	198	193	135	120
Southbound	192	169	314	171	202	144
Superior to Boulder	261	105	89	93	82	110
Denver to Superior	136	139	154	129	530	131

McCaslin Boulevard

Year 2025 - Travel Time Summary[1]

	Travel Time (seconds)			
Direction	No Build	Dual Left-Turn	6-Lane Diverging Diamond	Northeast Loop Ramp
AM Peak				
Northbound	222	113	144	141
Southbound	198	191	127	123
Superior to Boulder	209	144	114	122
Denver to Superior	109	109	109	131
PM Peak				
Northbound	211	238	200	163
Southbound	283	224	190	177
Superior to Boulder	247	285	77	110
Denver to Superior	154	229	146	194

McCaslin Boulevard

Year 2030 - Travel Time Summary[1]

	Travel Time (seconds)		
Direction	No Build	6-Lane Diverging Diamond	Northeast Loop Ramp
AM Peak			
Northbound	258	182	166
Southbound	205	143	143
Superior to Boulder	222	177	133
Denver to Superior	114	117	137
PM Peak			
Northbound	344	188	165
Southbound	563	197	195
Superior to Boulder	356	80	111
Denver to Superior	344	156	220

(1) Data based on the average of 10 VISSIM micro-simulation models.

Best travel times for each movement are highlighted in green. Travel times within 5 seconds of each other were considered equal. Movements shown all travel through the westbound ramp intersection. In 2030, the Northeast Loop Ramp exhibited queuing issues on the eastbound off ramp due to the congestion in the weave area between the ramp and Marshall Road. Because the DDI design eliminates that weave, it did exhibit qeuing issues on the ramp.

PROJECT OPEN HOUSE – FEBRUARY 2, 2012

What concerns do you have about traffic operations and safety at the US 36/McCaslin Interchange, and what traffic improvements would you like to see?

What parts of the interchange are most difficult for bicyclists and pedestrians to negotiate? How could these be improved?

What are your biggest issues or concerns with transit operations at the interchange? How could these be improved?

General Comments:

You may hand in this sheet before you leave tonight or
You can mail it to the address below by February 17, 2012

YOUR NAME: _____

ADDRESS: _____

PHONE # (Optional): _____

Return Comments to:
Jeff Ream
Felsburg Holt & Ullevig
6300 South Syracuse Way, Ste: 600
Centennial, CO 80111
P:(303)721-1440
F:(303)721-0832
E:jeff.ream@fhueng.com

PROJECT OPEN HOUSE – FEBRUARY 2, 2012

The US 36/McCaslin Interchange Study will help determine what short- to mid-term operational improvements and design would be appropriate for the US 36/McCaslin Boulevard interchange. The project study area includes McCaslin Boulevard between Dillon Road and Marshall Drive, as well as the interchange ramps and associated RTD transit stops.

The project seeks to create a design solution for the interchange that maximizes the use of the existing bridge structure to accommodate near-term, mid-term and possibly long-term traffic demand, while maintaining or enhancing pedestrian, bicycle, and transit connectivity and needs. These improvements would extend the operational life of the interchange prior to the implementation of the long-term design solution outlined in the US 36 Final Environmental Impact Statement. The project will address:

- Public input and involvement
- Vehicle operations through the interchange
- Pedestrian and bicycle connectivity across US 36
- RTD transit operations at the interchange
- Motorized and nonmotorized safety at the interchange

Because this is the primary interchange with US 36 for both the City of Louisville and the Town of Superior, there will be substantial collaboration between those agencies, CDOT and the public. Public and stakeholder involvement will be crucial to the interchange recommendations. We hope to see you again at future public meetings.

Please respond to the questions and provide any general comments you may have on the opposite side of this sheet and return it to the project representatives. You may also send your comments or questions to the below contacts:

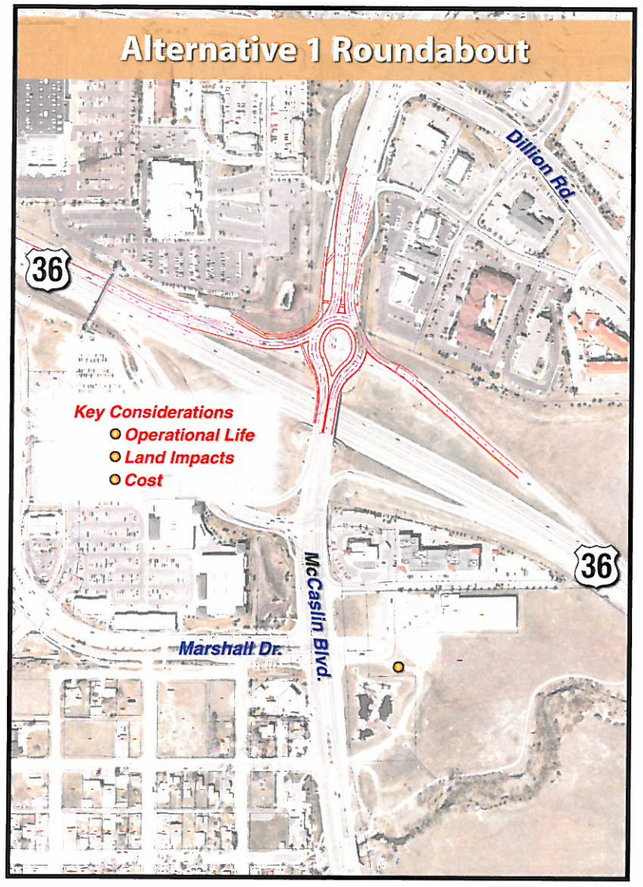
City of Louisville Project Manager:

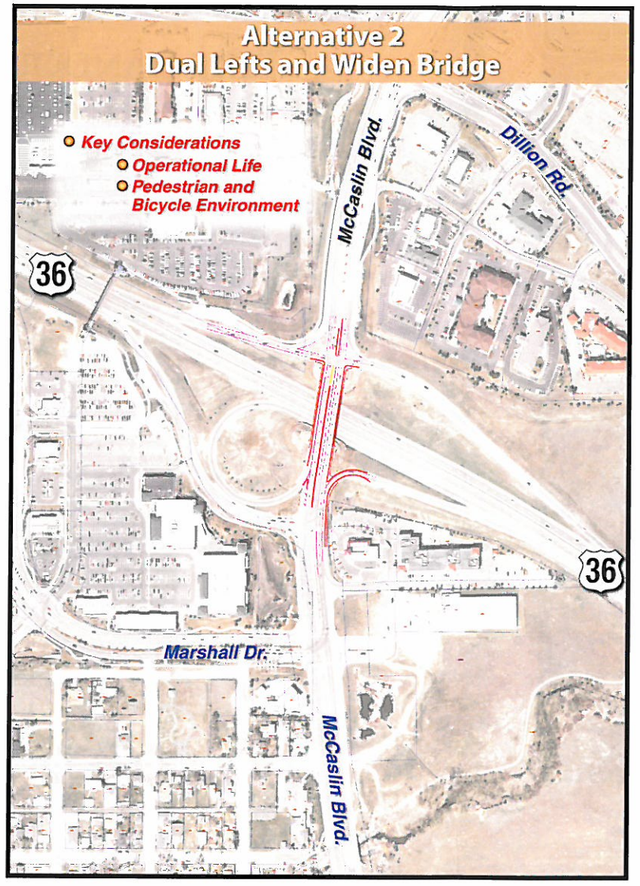
Troy Russ
749 Main Street
Louisville, CO 80027
Ph: (303) 335-4590
Email: troyr@louisvilleco.gov

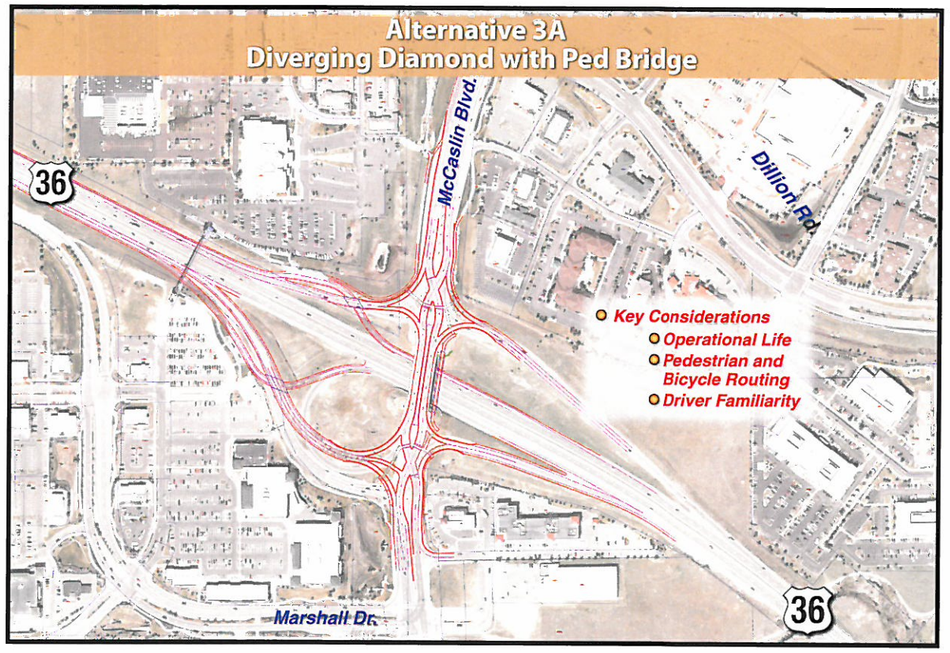
Consultant Team Project Manager:

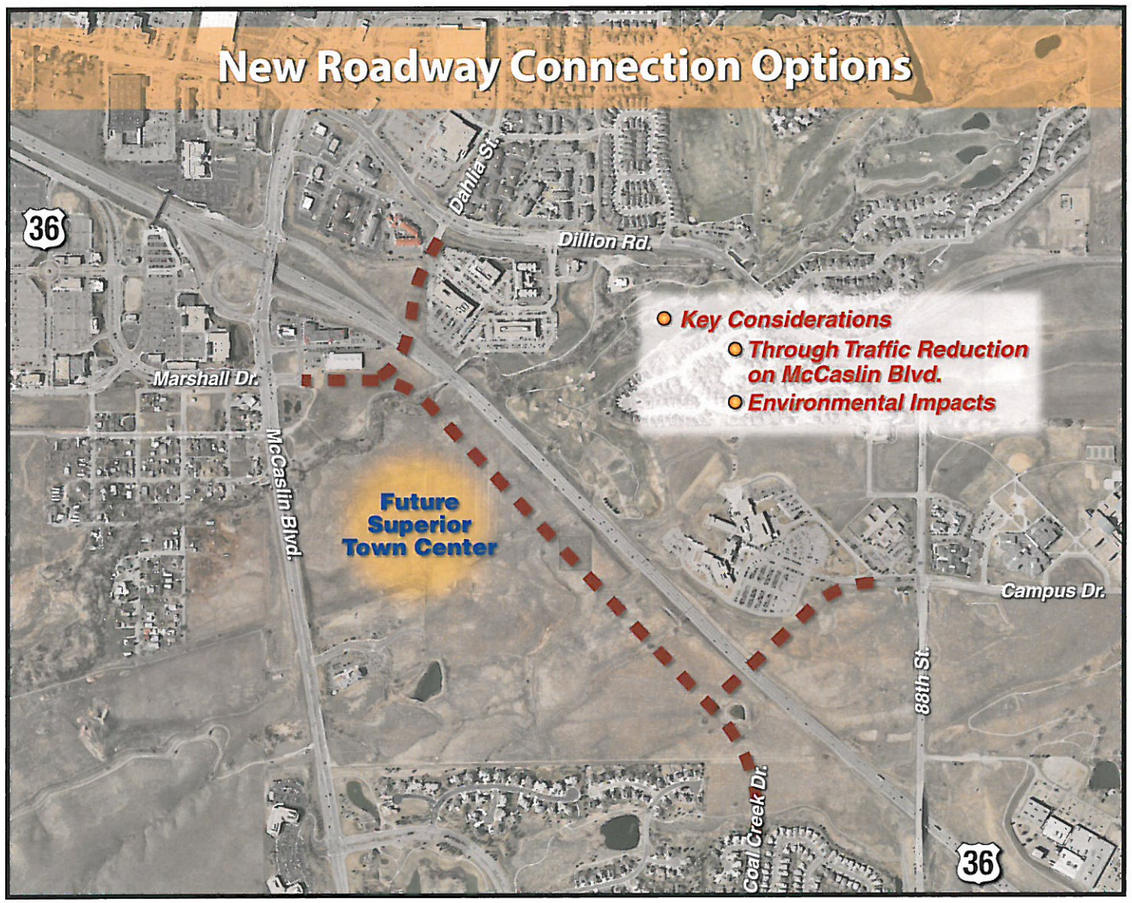
Jeff Ream
Felsburg Holt & Ullevig
6300 S. Syracuse Way, Ste. 600
Centennial, Colorado 80111
Ph: (303)721-1440
Email: jeff.ream@fhueng.com

Interchange Design Options









For questions or comments, please contact:

City of Louisville:
Troy Russ
(303)335-4590
troyr@louisvilleco.gov

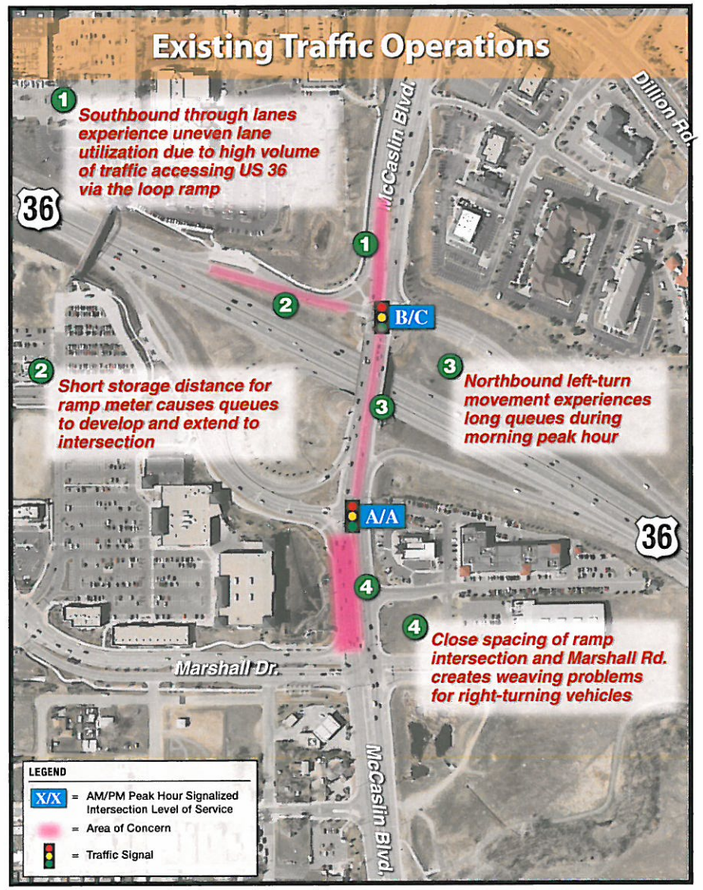
Consultant Team Project Manager:
Jeff Ream
(303)721-1440
jeff.ream@fhueng.com

US 36 and McCaslin Boulevard Interchange
Sub-Regional Modeling, Transportation Analysis, and Alternative Scoping Exercise
City of Louisville COLORADO · SINCE 1878
Town of Superior

Thank You for Coming to the Public Open House for the US 36/McCaslin Blvd. Interchange Study

This handout includes selected displays from the February 2, 2012 Public Meeting

We look forward to your continued involvement in this project



FELSBURG HOLT & ULLEVIG
apexdesign
US 36/McCaslin Interchange Evaluation 11 183 01 2/2/12